ABSTRACT OF THE DISCLOSURE

A free form source model is divided into surface sections by identifying external boundary edges and internal boundary edges. The boundaries are connected or further divided as necessary to achieve a perimeter about each surface section which is a single closed curve. Doubly curved surfaces may also be subdivided. A developable output surface which approximates each source model surface section is then determined by calculating the minimum cost triangulation of each source model perimeter. Costs to be minimized may include the deviation of the triangle surface normal from the edge normal, the degree of bending between adjacent triangles, or the departure of the approximated surface from the original surface. The two-dimensional boundary of the flattened surface guides fabrication of output segments from sheet material, which may be assembled into an output object comprised entirely of developable surfaces.